COP 5725 - Principles of DBMS - Final Project

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1   Requirements.

Design a database for an e-commerce website.

- Your design should be able to handle: customers, products, product categories, suppliers, orders and payments.

- Customers may have multiple addresses which are used for shipping or billing.

- Customers may have one or more credit cards on file. Each credit card should be associated with one billing address.

- Customers may specify their preferred shipping address and payment method.

- Customers should be able to add products to their shopping carts.

- The e-commerce company purchases products from suppliers and maintain a stock of all the products. You should keep a list of suppliers in your database.

- A product must have name, description, picture, price, and stock count.

- Every product in your database must have at least one supplier. Each supplier must supply at least one product, although the supplying price might be different.

- Each product must belong to exactly one category. A category might have subcategories or parent-categories. Your database should be able to store the category tree.

- Every order must be associated with one credit card. Customers may update or delete his cards/addresses at any time. So you should store a copy of the payment and shipping address information at the time of purchase. Products prices can also change at any time. So you also need to store the price of products at the time of purchase.

2   Introduction

I have used `PostgreSQL` to create the database named ecommerce. Figure 1 displays the conceptual schema adjusted to the requirements above mentioned. Section 4 shows the relational model with entity and referential integrity constraints.

   To run the `create_SQL` script successfully, one has to create the database (first command in the script) and execute the rest of the `SQL` statements having the intended target database selected in pgadmin. Finally, I have inserted at least five records into each table as can be seen in the `insert_SQL` script.
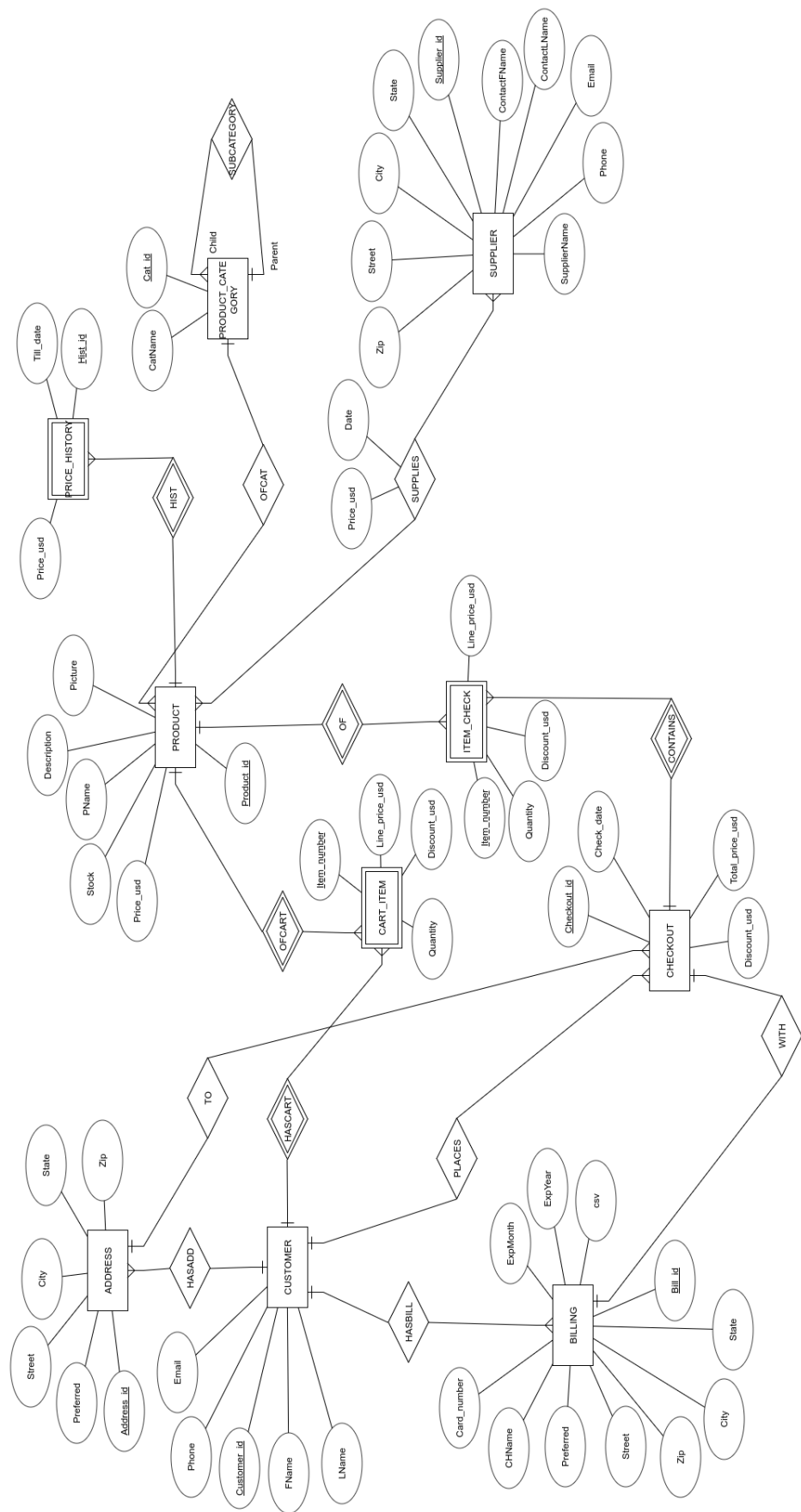
3 Conceptual Schema

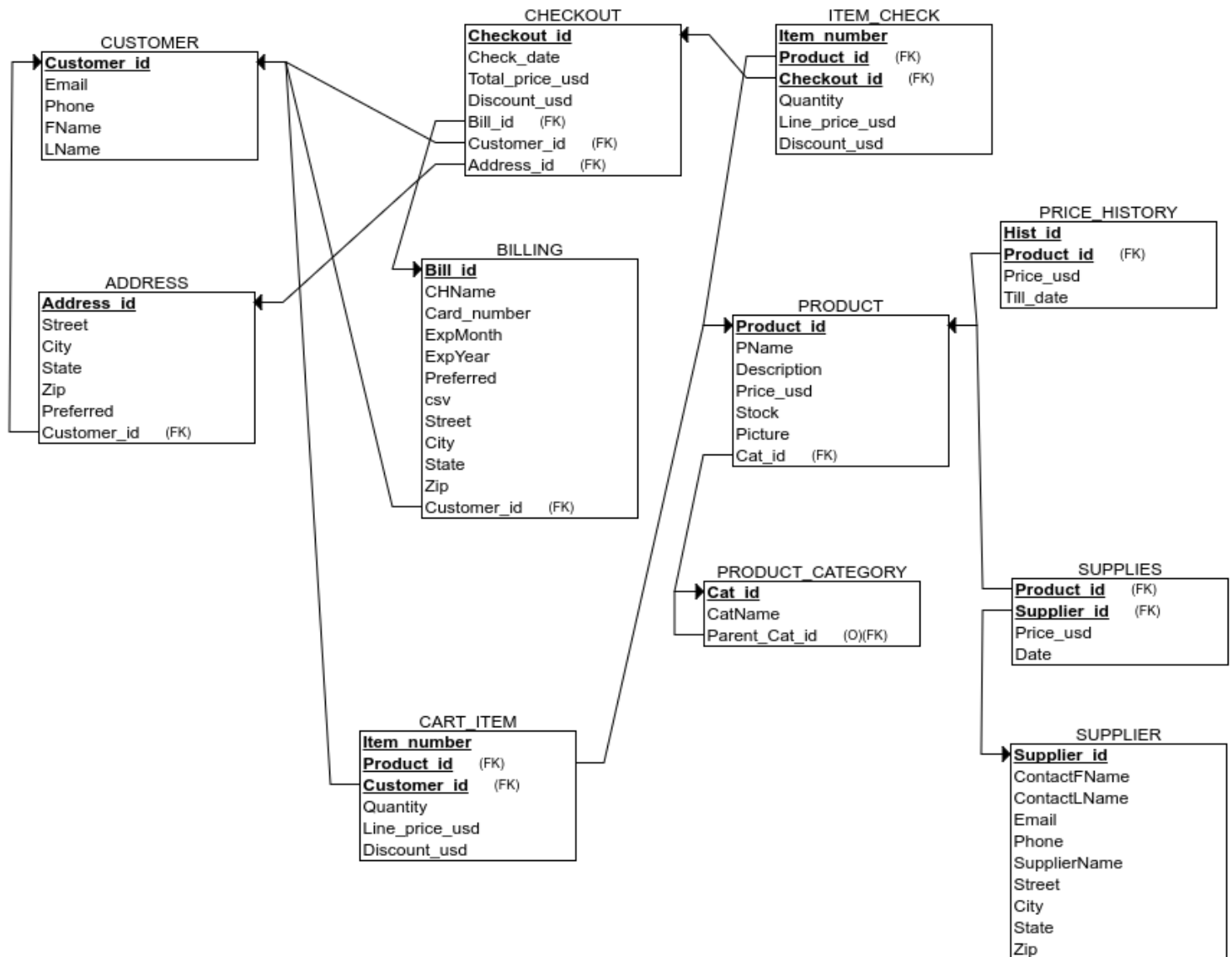Figure 1: Conceptual Schema for the e-commerce website.

4   Relational Model

Figure 2: Relational Model for the e-commerce website.